

fly's proboscis. But the manner in which this trypanosome at first multiplies and develops into male and female forms in the fly's intestine is very remarkable, and suggests the commencement of a life-cycle which is not completed, but which might be so under other conditions. In the case of the trypanosomes of fishes, Brumpt has shown that a given species will go through a complete development in a particular species of leech, but only through a part of the development in another species of leech. There may be conditions, therefore, in which *T. gambiense* would complete the developmental cycle which is seen to begin, but appears to be inhibited, in the tsetse-fly in Uganda. It must be borne in mind that the sleeping sickness is a new thing, apparently, on the Victoria Nyanza, and has broken out there comparatively recently in epidemic form.

In conclusion, there remains only the sad duty of referring to the untimely death of the youngest of the three collaborators in this work, who became himself in some way infected with the trypanosomes which he was studying, and passed away before the results of the investigation were published. Only those who knew Forbes Tulloch can gauge the loss and bereavement occasioned by his tragic end.

ὁ Δαφνὶς ἔβα ῥόον· ἔκλυσε δίνα
Τὸν Μώπαις φίλον ἀνδρα.

E. A. MINCHIN.

THE WIRELESS TELEGRAPHY CONFERENCE.

THE second International Conference on Wireless Telegraphy, which has been sitting during the past few weeks at Berlin, concluded its labours on Saturday, November 3, when the first "Convention radiotélégraphique internationale" was signed by all the representatives of the Powers. The States which have signed the convention are the following:—Great Britain, Germany, the United States of America, Argentina, Austria-Hungary, Belgium, Brazil, Bulgaria, Chili, Denmark, Spain, France, Greece, Italy, Japan, Mexico, Monaco, Norway, the Netherlands, Persia, Portugal, Rumania, Russia, Sweden, Turkey, and Uruguay.

The first conference, which, it will be remembered, was only of a preliminary nature, was held in Berlin in August, 1903, and a summary of the results then attained was given in NATURE at the time (NATURE, vol. lxxviii., p. 437). It was there pointed out that by far the most important resolution which the conference had to consider was that making it compulsory on all coastal stations to receive from and transmit to ships at sea all messages irrespective of system, and the hope was expressed that private interests would not be allowed to stand in the way of the development of one of the most beneficial of the recent practical applications of science. Three years have passed since that conference was held, but the correspondence and articles which have lately been so prominent in the daily Press show that this period has served neither to allay private jealousies nor to enlighten public opinion on the true merits of the case; the same appeals to ignorance and prejudice have been made now by both parties to the dispute as were made then.

As the whole question of the justice or injustice of the provisions of the present conference turns on the claims of Signor Marconi, it will not, perhaps, be out of place to recapitulate very briefly the early history of wireless telegraphy. In using the expression "wireless telegraphy," we use it in the sense now almost universally accepted of telegraphy by Hertzian waves, as any consideration of earth con-

duction or magnetic induction methods has naturally nothing to do with the present conference. The foundations of wireless telegraphy were laid, as everyone knows, by Clerk Maxwell in the theory which gave rise to the experimental researches of Hertz. At the Bath meeting of the British Association in 1888, when the results of Hertz's work were brought to the notice of British men of science by Prof. Fitzgerald, some experiments by Sir Oliver Lodge on the same subject were also described which showed that he was within an ace of making the same discoveries himself. For some time after this experimental work was chiefly devoted to the confirmation and extension of the work of Hertz. It was early recognised that there were possibilities about the new discovery which might render it a useful means of telegraphic communication, and suggestions to this effect appeared in 1891 in *The Electrician*, and in 1892 in the *Fortnightly Review* (from the pen of Sir William Crookes).

The practical application of Hertz waves to telegraphic purposes needed, however, the invention of a delicate detecting mechanism. What Lord Kelvin did for submarine telegraphy by the invention of the syphon recorder, Lodge and Branly did for wireless telegraphy by the invention of the coherer (1889-1891). From this time onward progress was rapid. In 1894 Sir Oliver Lodge demonstrated at the Royal Institution the transmission of signals over considerable distances and through several obstacles. But the credit for first establishing the practical utility of the system, for demonstrating that it was not merely a new scientific toy, lies with Signor Marconi, and to his energy and perseverance we owe it that wireless telegraphy as an art was born in 1896. To his energy, also, and to that of those associated with him, we undoubtedly owe, not only the most extended system of wireless telegraphy of to-day, but also to a large extent the extension of other systems which but for his lead would never have reached their present development. Yet no student of scientific progress can doubt for a moment that if Marconi had not stepped in at the critical point some other would have taken his place. The work of the true pioneers was done, the way into the new country was discovered, and it remained only for the most energetic and resourceful to till the virgin soil and reap the plentiful harvest.

Now that the reaping of the harvest is in sight we are confronted with the rival claims of the sowers. With a wisdom characteristic of the times, the Powers have decided that though each may sow and reap for himself, he shall conduct his operations in the way most advantageous to civilisation. This decision is embodied in the third article of the convention, which provides that "coastal stations and stations on shipboard are bound to interchange telegrams without distinction of the system of wireless telegraphy adopted by them." On behalf of the Marconi Company it has been urged that this provision was devised with the express purpose of obtaining for all systems—and especially the Telefunken system—the immense advantages of the Marconi Company's extended organisation. On the other hand, there could be no other reason for objecting to this clause than a desire on the part of the objector to establish a monopoly. As was pointed out in the article in NATURE to which reference has already been made, the peculiarities of wireless telegraphy render it essential for public utility that there should be either a world monopoly or a perfectly free interchange between competing systems. It is not difficult to choose between these alternatives, and no one, we venture to think, ten years hence will question the correctness of the decision now made.

There is little doubt, also, that once it is reconciled to the inevitable, the Marconi Company will realise the very substantial benefits it will obtain, both financially and otherwise. It is clear that the free and rapid growth of any one system will now tend to the development of all; it is clear, too, that the advantageous positions obtained by the Marconi Company on the coasts of the greatest shipping nation of the world will confer on it an inestimable advantage, of which it would surely have been deprived had a monopoly been allowed. It has been several times pointed out in *NATURE* that State control—and international control—of wireless telegraphy is a necessity, a fact recognised by all nations, and that this control could not be the control of a privately owned monopoly.

In reference to this clause—the only one of first importance—it should be mentioned that certain Powers, amongst them Great Britain, reserve the right to exempt certain stations from its operation on condition that they provide adequate substitutes for the closed stations.

One other proposal of great importance was that brought forward by the United States, that there should be the same obligation for compulsory intercommunication between ship and ship, and a supplementary agreement to this effect was signed by all the Powers except Great Britain, Japan, Italy, Mexico, and Persia. In view of the onerous nature of this obligation on shipowners in the present state of the art, we are inclined to think that the time is not yet ripe for its adoption, though doubtless it will be adopted by all the Powers at some future conference, and in the meantime individual ships have everything to gain and nothing to lose by carrying out its object whenever possible.

The convention also provides for priority of all messages of distress and answers thereto, for equitable division and regulation of charges, and for the establishment of an international bureau for the transaction of administrative work, publication of information, and so forth, but none of the twenty-three other articles deserves special comment. It may be added, though this naturally goes almost without saying, that the convention imposes no restrictions on the naval or military uses of wireless telegraphy. These never were and never could be a subject for international settlement. The various States are pledged to ratify the provisions as quickly as possible, and it is hoped the convention will become operative on July 1, 1908. Between now and then, we shall probably hear and read a good deal more about it in Parliament and in the Press, and it is to be hoped that those who write on the subject to the daily Press will make some attempt to understand the technicalities and to study the provisions of the convention.

MAURICE SOLOMON.

NOTES.

THE honours conferred by the King on the occasion of his sixty-fifth birthday appear to be mainly for political services, and there is little recognition of the claims of science. Mr. John Tweedy, president of the Royal College of Physicians, has received the honour of knighthood; Colonel R. C. Hellard, director-general of the Ordnance Survey, and Mr. F. G. Ogilvie, principal assistant secretary (Technology and Higher Education in Science and Art) Board of Education, have been appointed Companions of the Order of the Bath; Colonel D. A. Johnston, formerly director-general of the Ordnance Survey, has been appointed a Knight Commander of the Order of Saint Michael and Saint George; Prof. R. W. Boyce, F.R.S.,

has received the honour of knighthood; and Dr. J. M. Lang, Vice-Chancellor and principal of the University of Aberdeen, has been appointed a Commander of the Royal Victorian Order.

A STATEMENT has recently obtained currency that the French people themselves, after a hundred years' use of the metric system, cannot claim that it has been adopted throughout France, and a free translation of a circular issued to chambers of commerce in France by the French Minister of Commerce has been employed to support the statement. The Decimal Association in this country recently addressed a letter to the French Minister of Commerce with a view to determine what justification existed for the statement referred to. The Minister's reply makes it clear that the circular is directed only against the use of *old names* in certain trades, and that the English translation misinterprets its meaning and conveys a wholly wrong impression. It is satisfactory to find, in view of such endeavours to retard the acceptance of the metric system by this country, that it has recently been adopted in the works of Messrs. Joseph Crosfield and Sons, Ltd., and steadily grows in popularity.

UNDER the chairmanship of Mr. Lawrence Hardy, M.P., a large and representative conference of fruit growers from the fruit-growing counties of England was held at the South-Eastern Agricultural College, Wye, on November 7. Papers were contributed on planting of fruit trees, strawberries, American blight, and fungus diseases. In the latter paper reference was made to the American gooseberry mildew, the appearance of which in England has been noted by the college mycologist (Mr. Salmon), and a resolution calling upon the Board of Agriculture to take immediate steps to prevent further importation of gooseberry bushes and to destroy infected stocks in this country was unanimously passed. The disease appeared in Ireland in 1900, and has made most extensive ravages in that country, and serious alarm is felt by growers that a similar result may ensue in England unless drastic measures are immediately taken.

SHOCKS of earthquake were felt at Akureiri, Iceland, at 10.20 p.m. on November 8, followed by more shocks of less violence between 1 a.m. and 2 a.m. on November 9.

PROF. W. WIEN, professor of physics in the University of Würzburg, has become chief editor of the *Annalen der Physik* (Leipzig: J. A. Barth) in succession to the late Prof. Drude.

THE Bradshaw lecture of the Royal College of Surgeons will be delivered by Mr. Edmund Owen on Wednesday, December 12, upon the subject of "Cancer; its Treatment by Modern Methods."

A CHRISTMAS course of lectures, adapted to a juvenile auditory, will be delivered at the Royal Institution by Mr. W. Duddell, on "Signalling to a Distance; from Primitive Man to Radiotelegraphy" (experimentally illustrated). The lectures will commence on December 27.

IT is proposed, on the occasion of the retirement of Major Craigie, C.B., from the Board of Agriculture and Fisheries, to entertain him at a complimentary dinner on Wednesday, December 12, in recognition of his services to the interests of agriculture and the furtherance of statistical knowledge.

THE balloon *Milano*, of 1000 cubic metres capacity, which started from the exhibition grounds at Milan on Sunday morning, November 11, descended at Aix-les-Bains at